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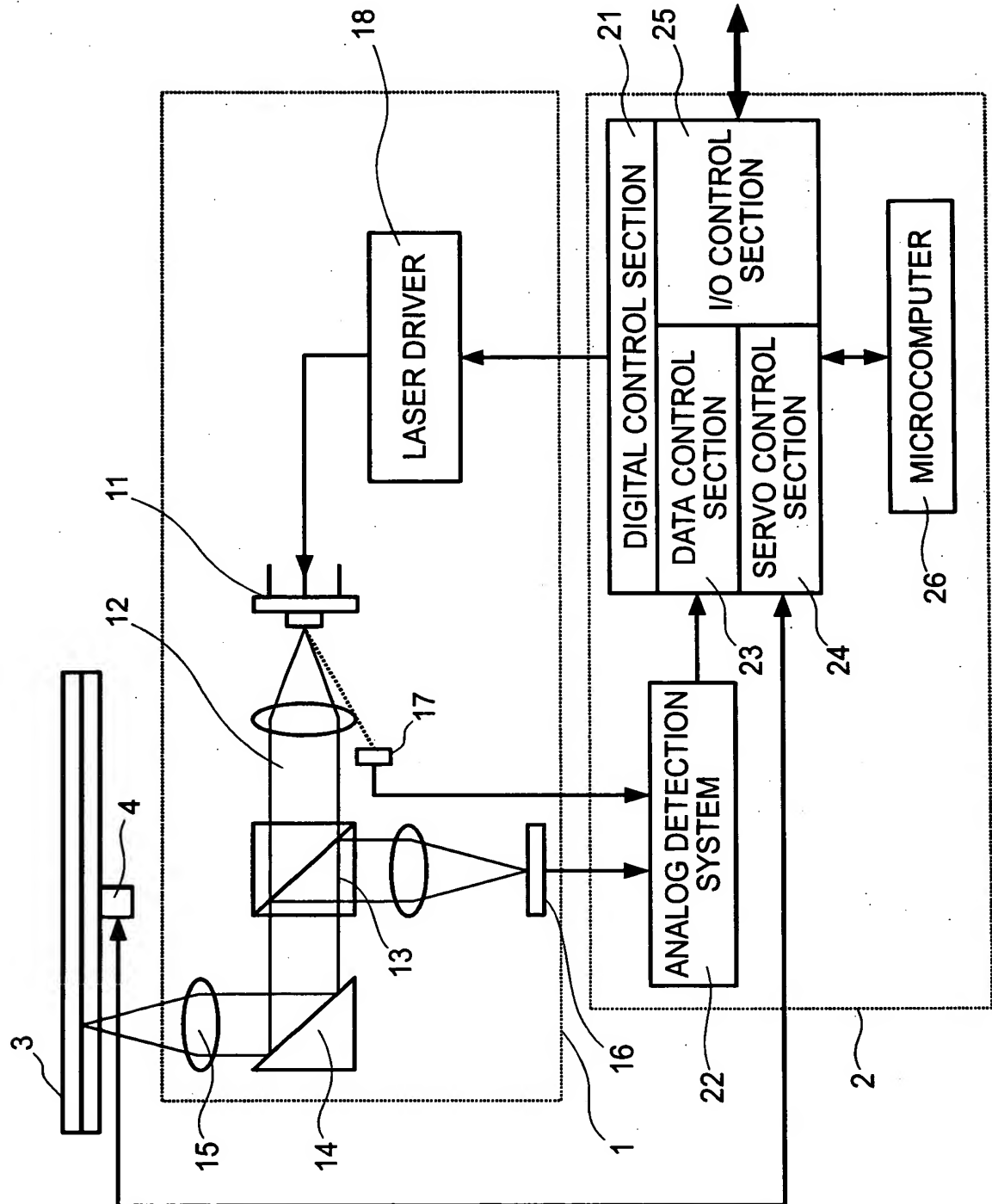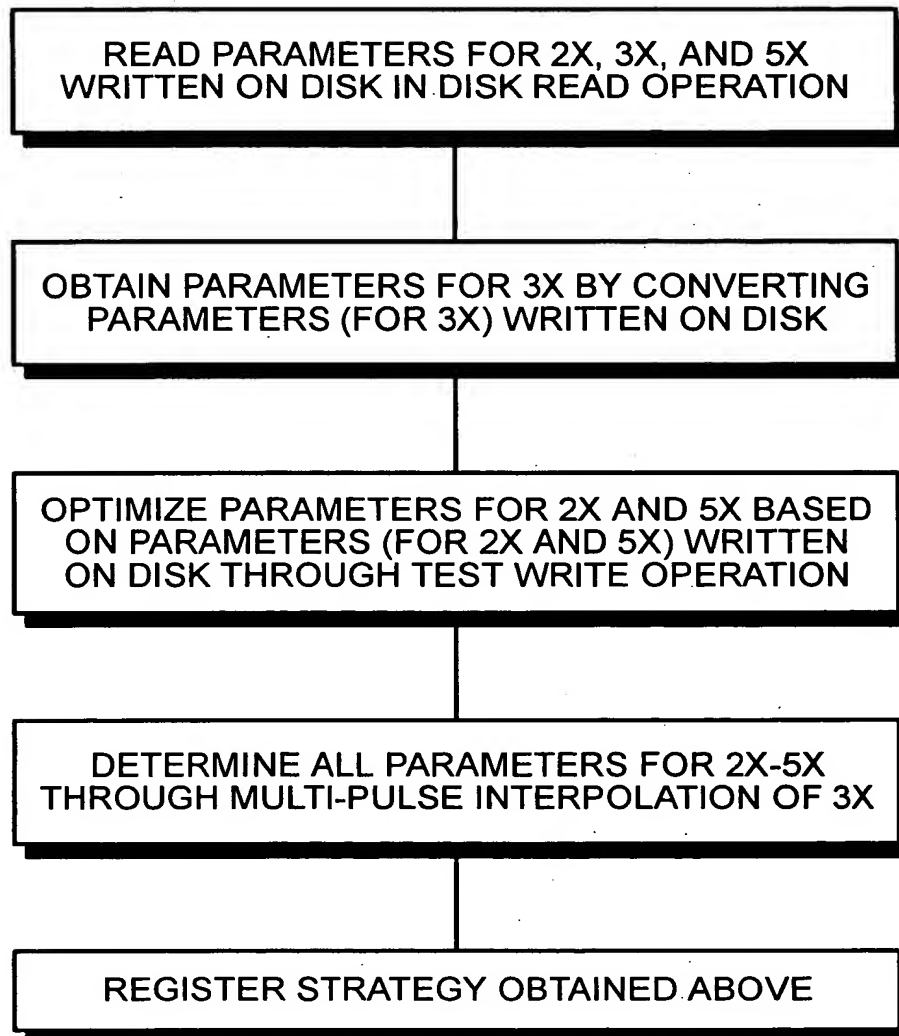
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FIG.1

FIG.2

```
┌─────────────────────────────────────────────┐
│   READ PARAMETERS FOR 2X, 3X, AND 5X         │
│   WRITTEN ON DISK IN DISK READ OPERATION     │
└─────────────────────────────────────────────┘
                      │
┌─────────────────────────────────────────────┐
│   OBTAIN PARAMETERS FOR 3X BY CONVERTING     │
│   PARAMETERS (FOR 3X) WRITTEN ON DISK        │
└─────────────────────────────────────────────┘
                      │
┌─────────────────────────────────────────────┐
│  OPTIMIZE PARAMETERS FOR 2X AND 5X BASED     │
│  ON PARAMETERS (FOR 2X AND 5X) WRITTEN        │
│  ON DISK THROUGH TEST WRITE OPERATION         │
└─────────────────────────────────────────────┘
                      │
┌─────────────────────────────────────────────┐
│   DETERMINE ALL PARAMETERS FOR 2X-5X          │
│   THROUGH MULTI-PULSE INTERPOLATION OF 3X     │
└─────────────────────────────────────────────┘
                      │
┌─────────────────────────────────────────────┐
│   REGISTER STRATEGY OBTAINED ABOVE            │
└─────────────────────────────────────────────┘
```
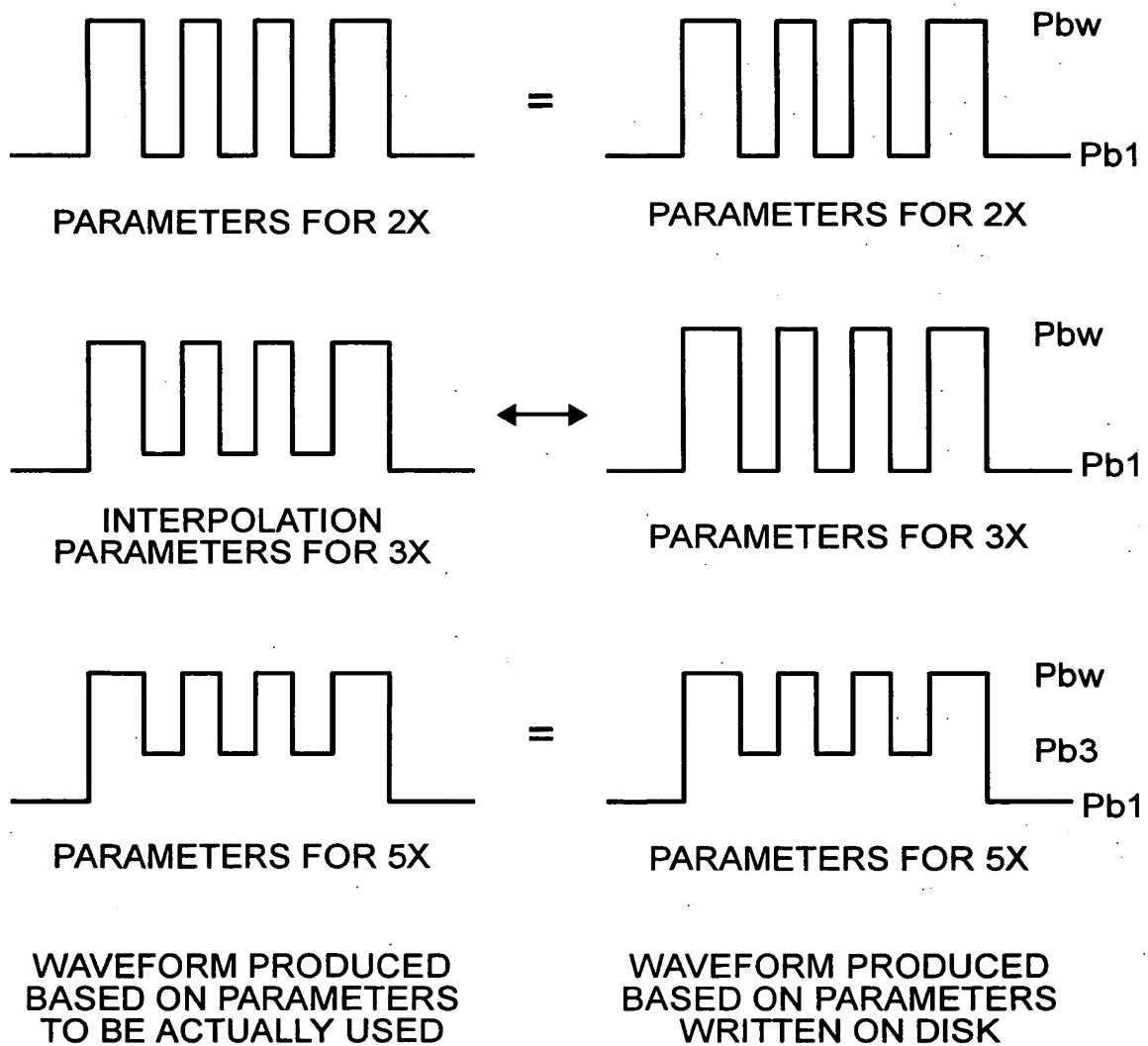
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FIG.3

PARAMETERS FOR 2X

=

Pbw

Pb1

PARAMETERS FOR 2X

INTERPOLATION
PARAMETERS FOR 3X

↔

Pbw

Pb1

PARAMETERS FOR 3X

PARAMETERS FOR 5X

=

Pbw

Pb3

Pb1

PARAMETERS FOR 5X

WAVEFORM PRODUCED
BASED ON PARAMETERS
TO BE ACTUALLY USED

WAVEFORM PRODUCED
BASED ON PARAMETERS
WRITTEN ON DISK

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FIG.4

$$y = -0.0167x^2 + 0.2333x - 0.4$$

Pb RATIO = (Pb3-Pb1)/(Pw-Pb1)

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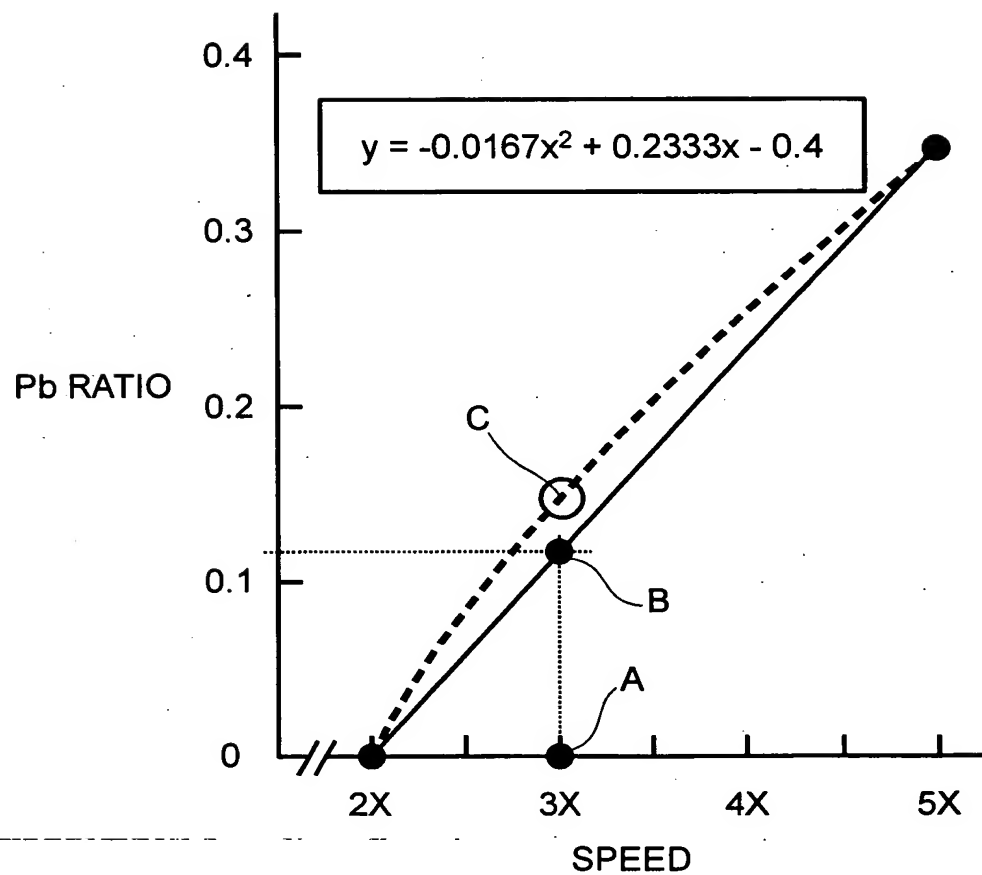
FIG.5
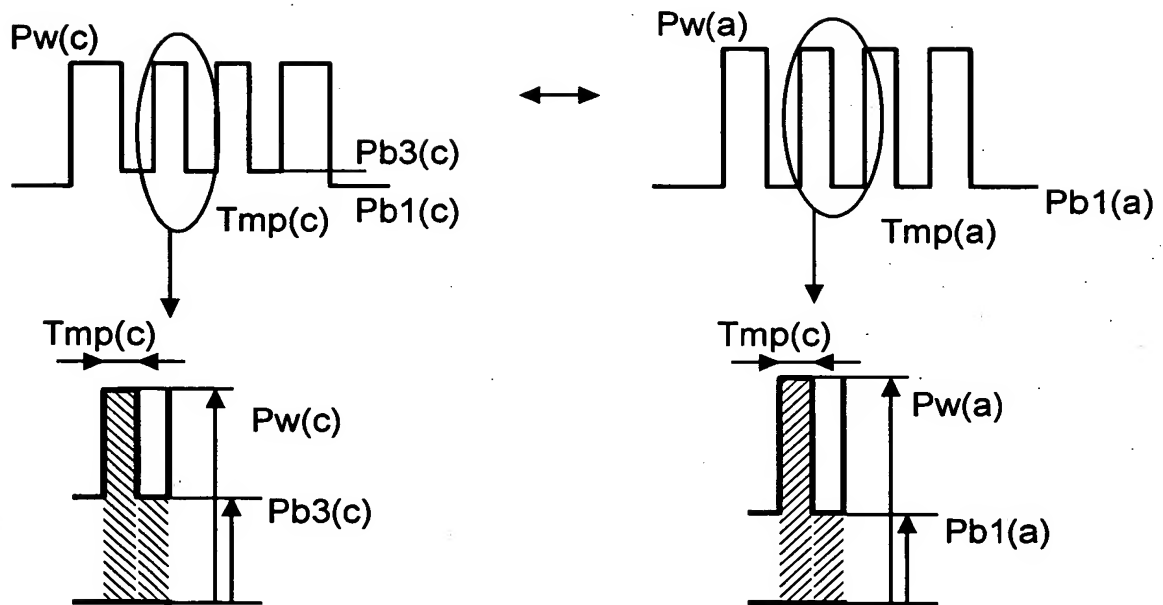
$$Pw(c) \times Tmp(c) + Pb3(c) \times (1-Tmp(c)) = Pw(a) \times Tmp(a) + Pb1(a) \times (1-Tmp(a))$$

PARAMETERS FOR 3X
AFTER CONVERSION (POINT C)

PARAMETERS FOR 3X
WRITTEN ON DISK (POINT A)

CORRECTING METHOD

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FIG.6

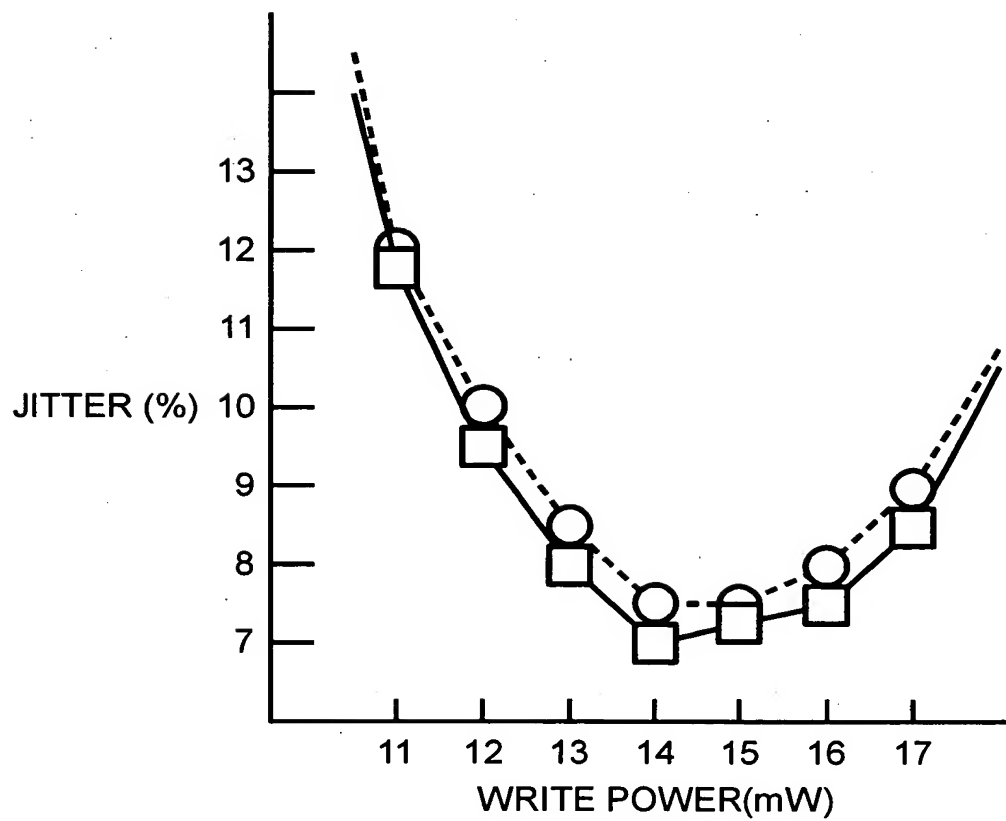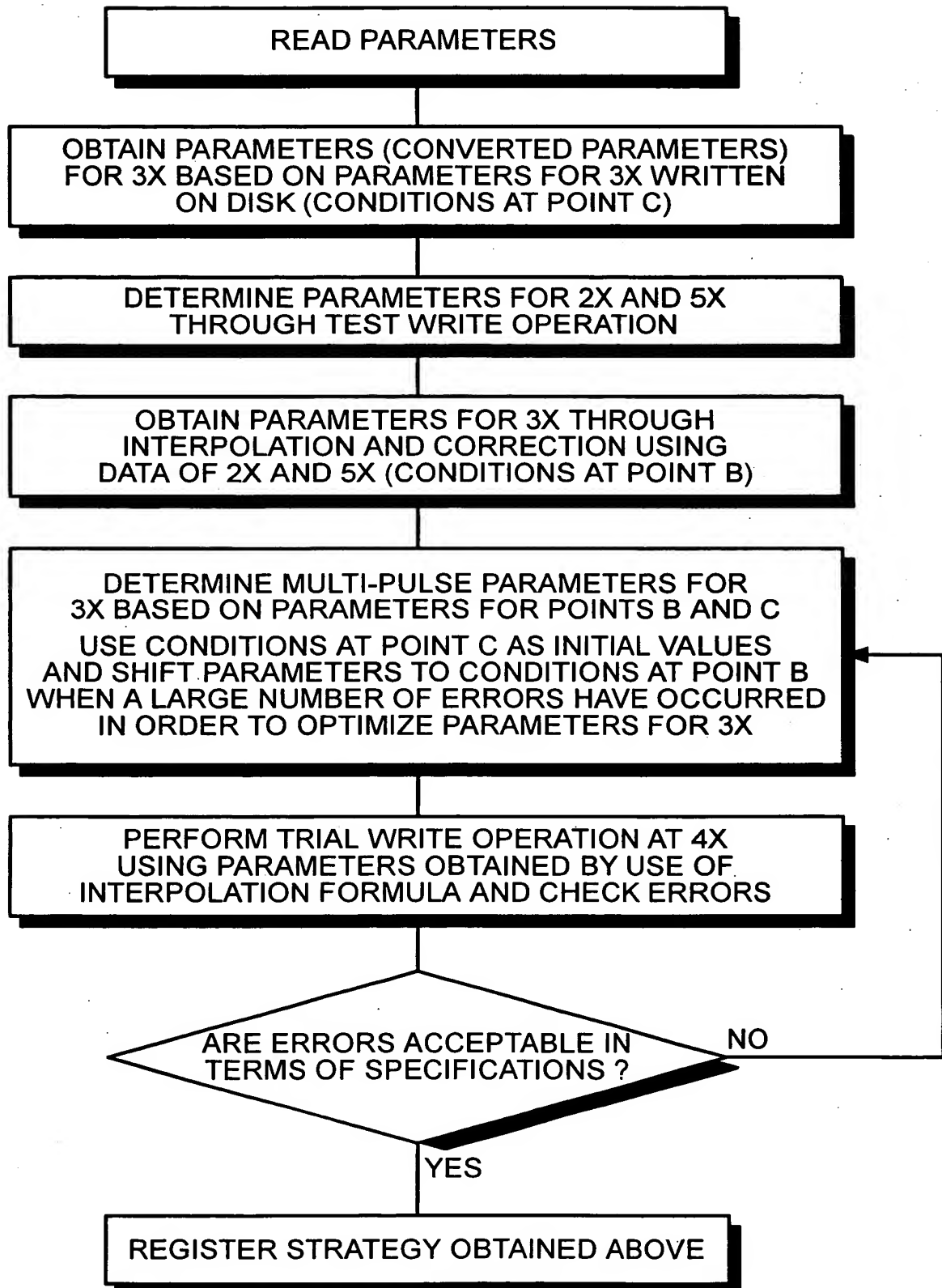Robert C. Colwell, Reg. No. 27,431   (650) 326-2400
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Titl : Writing Waveform Controlling Method and Optical Disk...
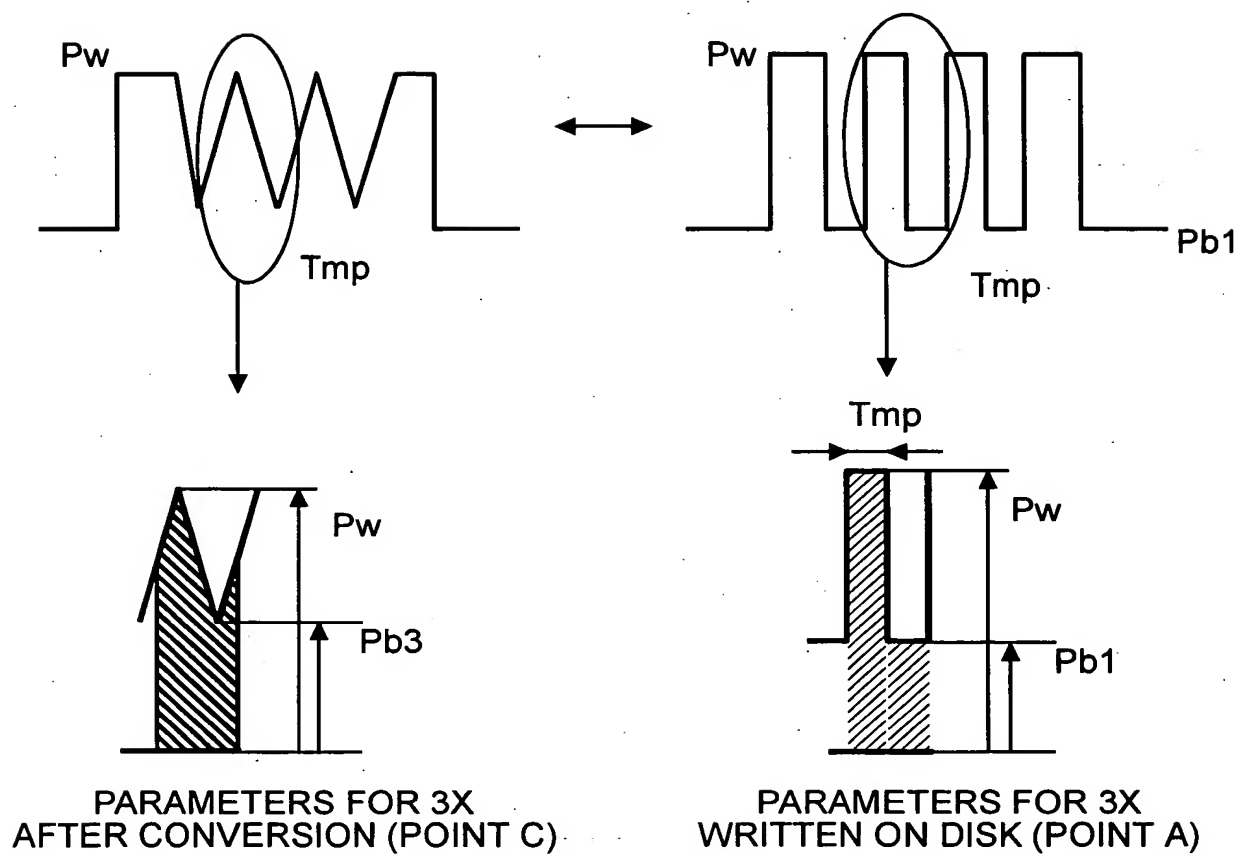Atty Dock t No. 16869P-097100US
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FIG.7

READ PARAMETERS

OBTAIN PARAMETERS (CONVERTED PARAMETERS) FOR 3X BASED ON PARAMETERS FOR 3X WRITTEN ON DISK (CONDITIONS AT POINT C)

DETERMINE PARAMETERS FOR 2X AND 5X THROUGH TEST WRITE OPERATION

OBTAIN PARAMETERS FOR 3X THROUGH INTERPOLATION AND CORRECTION USING DATA OF 2X AND 5X (CONDITIONS AT POINT B)

DETERMINE MULTI-PULSE PARAMETERS FOR 3X BASED ON PARAMETERS FOR POINTS B AND C

USE CONDITIONS AT POINT C AS INITIAL VALUES AND SHIFT PARAMETERS TO CONDITIONS AT POINT B WHEN A LARGE NUMBER OF ERRORS HAVE OCCURRED IN ORDER TO OPTIMIZE PARAMETERS FOR 3X

PERFORM TRIAL WRITE OPERATION AT 4X USING PARAMETERS OBTAINED BY USE OF INTERPOLATION FORMULA AND CHECK ERRORS

ARE ERRORS ACCEPTABLE IN TERMS OF SPECIFICATIONS ?   NO

YES

REGISTER STRATEGY OBTAINED ABOVE

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FIG.8

PARAMETERS FOR 3X
AFTER CONVERSION (POINT C)

PARAMETERS FOR 3X
WRITTEN ON DISK (POINT A)

CORRECTING METHOD

FIG.9

(X) ——— Pw

(Y) ——— Pb

(a) WHEN Tr < Tw/2

Tw = 10ns   (100MHz)

Tr = 4ns

ΔP

(X)

ΔP

(Y)

(b) WHEN Tr > Tw/2

Tw = 6ns   (167MHz)

Tr = 4ns

ΔP = (INCLINATION OF IRRADIATION POWER) × (ADDITIONAL TIME REQUIRED TO REACH SATURATION)

ΔP = (Pw-Pb)/Tr × (Tr-Tw/2)/2